percentage points, and Sprint's share stayed constant. This implies that other firms captured roughly one-sixth -- 16 percent -- of the long distance market from the "Big 3" during this period.

124. *Point of Agreement #5*: Overall, concentration in the long distance industry has declined rapidly, and is continuing to decline rapidly. *See* MacAvoy Dec., p. 53. This is evident from MacAvoy's table 9 (p. 52), which shows the following. HHI declined from 0.83 in 1984 to 0.47 in 1990, to 0.35 in 1995, to 0.25 in 1997. Notably, the MCI-Worldcom merger in 1998 failed to increase industry concentration because smaller firms continued to capture significant market share from the Big 3.

125. *Point of Agreement #6*: There is no evidence of any collusion among long distance carriers (MacAvoy Dec., p. 19: "there is no known evidence of collusion.")

126. *Point of Agreement #7*: ARPM (average revenue per minute) has generally been declining in absolute terms during the 1990s, and these absolute declines have exceeded the absolute declines in average access cost per minute. This is evident from MacAvoy's table 18 (p. 90). In real terms, these price reductions have been even greater. (For reasons that we detail below, MacAvoy inappropriately focuses on trends in ARPM net of access costs, expressed as a fraction of ARPM.)

127. *Point of Agreement #8*: The provision of long distance services involves a high level of costs that do not vary with volume. *See, e.g.*, MacAvoy Dec., p. 16 n. 24.

b. Points Of Disagreement

128. Despite our agreement on these critical issues, MacAvoy and Taylor nevertheless conclude that long distance is not competitive, and that it is characterized by tacit collusion. Neither venture an explanation for the alleged and apparently miraculous ability of the "Big 3" to maintain tacitly collusive outcomes in the face of excess capacity, aggressive entry and rapid growth by new firms, sharp erosion of market share by established firms, plummeting concentration – in short, under conditions that are indisputably pro-competitive. The correct explanation is simple: MacAvoy and Taylor misunderstand the implications of competition in long distance, and systematically misinterpret their own evidence. The following is a list of their most serious conceptual and analytic errors.

129. *Error #1*: Both MacAvoy and Taylor incorrectly attempt to draw inference about the intensity of competition from their estimates of the gap between price and marginal cost, and from what they perceive as growth in this gap. MacAvoy explicitly asserts that "price equals marginal cost" is the appropriate standard for evaluating competition in this industry (*see, e.g.*, pp. 59-61). These criteria are completely misguided. The existence of a significant gap between price and marginal cost does not support an inference that competition is insufficient, and an increase in this gap does not support an inference that the intensity of competition has declined.

130. Recall the eighth point of agreement, above: long distance is a market with substantial volume-insensitive costs of operation. According to MacAvoy, marginal costs are constant. This necessarily implies that the production of long distance services involves increasing returns to scale. It is basic economics that the paradigm of perfect

competition is inapplicable in a setting with increasing returns. If prices are set equal to marginal cost, firms will incur losses and be forced to shut down and no production will occur. To have a positive level of economic activity, prices must exceed marginal cost. To put it another way, neither MacAvoy nor Taylor apparently believe that long distance firms are entitled to recover the volume-insensitive costs that make production possible. Of course, Dr. Taylor argued on behalf of BA-NY that UNE prices should exceed TELRIC in order to ensure the recovery of joint and common costs. Apparently, the same logic does not apply to long distance services.

131. If the paradigm of perfect competition is inapplicable, then what is the appropriate framework for evaluating the state of competition in long distance? One natural benchmark emerges from the theory of contestable markets. In a contestable market, an incumbent firm's pricing is held in check by the threat of entry, and the firm sets prices to cover average costs. As is well known, contestable outcomes achieve the optimal allocation of resources given the restriction that revenues must cover costs. A second natural benchmark emerges from the theory of "monopolistic competition." In a monopolistically competitive market, firms offer differentiated products, but entry drives prices down to average costs. A monopolistically competitive outcome is not necessarily socially optimal. Indeed, if (as in the current instance) the offerings of different firms are substitutes, then the equilibrium level of entry may be socially excessive, and further entry should be discouraged. In either framework, the appropriate criterion for assessing the intensity of competition is the relation between price and *average* cost, not *marginal* cost.

132. The implications of these observations completely undermine the legitimacy of MacAvoy's and Taylor's analyses. To illustrate this point in concrete terms, consider this very simple example. Assume that the marginal cost of providing long distance service is 10 cents per minute, that all customers inelastically purchase 20 minutes of service per month, and that the fixed costs of service (including administration, maintenance, facilities, etc.) average out to $5 per customer. Then total costs per customer are $7 per month and average costs are 35 cents per minute. Consequently, the contestable market outcome involves a price of 35 cents per minute. This is more than three times marginal cost, and yet there is no sense in which this outcome is insufficiently competitive.

133. To continue our illustration, assume next that the government reduces access costs, thereby pushing marginal costs down to 5 cents per minute. Suppose also that fixed costs continue to average $5 per customer. Then the total costs per customer are now $6 per month and average costs are 30 cents per minute. Consequently, the contestable market price falls to 30 cents per minute. Notice, however, what happens to the measure of price that MacAvoy studies: (price - marginal cost)/price. Originally, this ratio was (35-10)/35 = 0.714. After the reduction in access prices, the ratio is (30-5)/30 = 0.833. Thus, MacAvoy's markup has risen, despite the fact that both outcomes are perfectly contestable!

134. While very simple, our illustration captures some important aspects of recent developments in long distance. Access prices have declined significantly as a result of government action. Fixed costs, which depend to a large extent on wages and capital expenditures, have almost certainly declined less slowly, and may have even increased.

Consequently, there is nothing at all surprising or non-competitive about rising price-cost margins, as MacAvoy defines them.

135. *Error #2*: Both MacAvoy and Taylor inappropriately attempt to evaluate competition by constructing a single price series for each long distance service. This obscures some of the most important and informative aspects of competitive dynamics in long distance markets.

136. There are at least three distinct categories of costs for long distance services: costs that vary with volume for a particular subscriber (including but not limited to access charges), costs that vary with the number of subscribers, but not with the volume of calls for a particular subscriber (including but not limited to aspects of account administration, billing, collections, and fraud), and costs that do not vary either with volume for a particular subscriber or with the number of subscribers (including but not limited to aspects of central administration, facilities, and maintenance). In our discussion of *Error #1*, we focused on the implications of costs that fall into the third category. Here, we stress the importance of costs that fall into the second category.

137. In the presence of costs that vary with the number of subscribers but not with the volume for a particular subscriber, the average costs per minute of supplying any given subscriber depend on that subscriber's volume. Even in the absence of truly fixed costs, average charges per minute should exceed marginal costs by an amount that varies with the subscriber's volume. A simple example makes this point more concrete. Assume that the fixed costs of establishing and maintaining an account are $3 per month, and that the

marginal cost of long distance service is 5 cents per minute. Then, to cover costs that are variable at the level of the account, a long distance company must charge an individual with a calling volume of 20 minutes per month at least $4, or 20 cents per minute. In contrast, the company needs to charge an individual with a calling volume of 200 minutes per month at least $13, or 6.5 cents per minute to cover these same costs.

138. Further markups are required to cover fixed costs. The principles of "Ramsey pricing" imply that the efficient markups vary inversely with the elasticity of demand. If, for example, higher volume customers have more elastic demands, efficient pricing implies that they will face smaller proportional markups over the costs that are variable at the level of the account. Contestable markets achieve this efficient outcome. All of this implies that, if competitive forces are working properly, we should observe very different prices and pricing policies for customers in different calling volume categories.

139. The same reasoning implies that the sensitivity of average price-per-minute to changes in marginal costs (such as access costs) should be proportionately greater for high volume customers. If, in the preceding example, marginal costs fall to 4 cents per minute due to a reduction in access charges, the average price per minute that achieves break-even for costs that are variable at the level of the account falls to 19 cents for the low volume customer - only a 5 percent decline - and to 5.5 cents for the high volume customer - more than a 15 percent decline. For the low volume customer, the effects of the reduction in marginal costs on average cost per minute can be completely offset by even a modest inflationary increase in non-volume sensitive subscriber costs (from $3 to $3.20). In contrast,

for the high volume customer, a much larger increase in non-volume sensitive subscriber costs (from $3 to $5) would be required to offset the effect on average cost per minute of the same reduction in marginal costs. Consequently, one should expect the prices charged to high and low volume customers to vary differently over time and with changes in access costs. In particular, in an appropriately competitive (contestable) market, the average price per minute charged to high volume customers is much more likely to fall than is the average price per minute charged to low volume customers. Thus, much of the pertinent competitive price dynamics may be obscured by lumping subscribers together for the purpose of calculating a single price index.

140. Once one fully appreciates *Error #2*, it is evident that it leads to a collection of collateral errors, which we now discuss.

141. *Error #2A*: Both MacAvoy and Taylor incorrectly interpret alleged price increases for low volume customers as indicative of insufficient competition (*see e.g.*, Taylor Dec., pp. 5-7). As we have already demonstrated, the average price per minute paid by low volume customers in a contestable market should not be very sensitive to reductions in access charges. Moreover, even small (inflationary) increases in fixed costs can offset large access charge reductions, justifying increases in the average "low-volume" price. In addition, due to the regulatory history of the industry, the pricing structure of long distance services has traditionally incorporated cross-subsidies from high volume to low volume users. The elimination of these cross-subsidies naturally counteracts the effects of falling access charges on average prices charged to low volume customers.

142. MacAvoy Dec. (p. 96) actually goes so far as to characterize the differences in prices charged to low volume and high volume customers as "discriminatory price structures" resulting from "tacit collusion." He asserts that low volume and high volume subscribers should be charged similar prices because their calls involve similar marginal costs. He completely ignores the need to recover both categories of volume-insensitive costs, as well as the differential impact of these costs on the appropriately efficient (contestable market) pricing of services to low volume and high volume customers.

143. *Error #2B*: Both MacAvoy and Taylor incorrectly regard the emergence of fixed, volume insensitive monthly fees as evidence of insufficient competition. In fact, this is an appropriate competitive development that follows naturally from the existence of costs that vary with the number of subscribers, but not with a subscriber's volume. MacAvoy's confusion is readily apparent in his nonsensical statement (p. 91) that these kinds of charges "require subscribers to pay for calls that they don't actually make." He completely misses the point that these charges efficiently defray the volume-insensitive costs of maintaining a subscriber's account. Apparently, MacAvoy does not believe that long distance carriers are entitled to recover these costs. His confusion concerning the economic role of fixed fees is also evident on p. 93. There he claims that, with a minimum $3 monthly charge, a customer paying for one four minute call is charged 75 cents per minute. He concludes: "Unless 50 cents per minute of additional costs have been incurred by this carrier in completing that call, this is non-competitive price discrimination." This is completely wrong-headed. The minimum $3 charge implies that customers pay exactly nothing per

minute until the point where their volume-sensitive charges would total $3. Apparently aware of his error, he baldly asserts (p. 97), contrary to established economic logic and with no evidence, that customers base their calling decisions on average charge per minute, rather than on marginal charges.

144. *Error #2C*: Both MacAvoy and Taylor severely understate the competitive significance of discounts targeted at high volume users (*see* MacAvoy Dec., pp. 94-98, and Taylor Dec., pp. 7-9 and 15-16). They attempt to dismiss the importance of these plans through several specious arguments. First, they point out that these plans do little to benefit low volume customers. This is an appropriate and competitive outcome; see our discussion of *Error 2A*, above. Second, MacAvoy and Taylor claim that discount plans actually raise prices for low volume customers (*see, e.g.,* MacAvoy Dec., p. 94). This is obviously incorrect since low volume customers are under no obligation to enroll in plans designed for higher volume customers. And, even if a subscriber happens to pay a higher price in one particular month, he or she may benefit on average. Third, MacAvoy and Taylor claim that high volume beneficiaries of discount plans constitute a minority of subscribers (*see, e.g.,* Taylor Dec., pp. 7 and 15). Both fail to mention that the high volume group nevertheless accounts for the vast majority of calling volume. Figures supplied to us by AT&T imply that, as of a few years ago, 47 percent of AT&T's customers spent less than $10 per month, but that the remaining 53 percent of customers with calling volume in excess of $10 per month accounted for 93 percent of revenues. We have no reason to believe that these figures have changed dramatically. Thus, by emphasizing fractions of subscribers

rather than fractions of calling volume, MacAvoy and Taylor radically understate the economic importance and competitive significance of discounts.

145. *Error #2D*: Both MacAvoy and Taylor focus on discount programs one at a time, rather than on the mix of discount programs (*see, e.g.*, Taylor, p. 15). Different plans have different benefits for different classes of customers. It is important to evaluate each discount plan based on the characteristics of the subscriber group for which it is designed to compete, rather than based on the characteristics of a group for which it is not intended, and then to consider the combined effects of all plans. Neither MacAvoy nor Taylor attempt to do this.

146. *Error #2E*: Both MacAvoy and Taylor misleadingly focus on changes in offerings one element at a time, rather than as a package. For example, Taylor (p. 4) asserts that the introduction of fixed monthly fees did not coincide with changes in the fixed costs of serving accounts. However, it did coincide with other pertinent developments that Taylor completely ignores. During the pertinent time frame, fierce competition for high volume customers resulted in the migration of these customers to more attractive calling plans. This attenuated the residual implicit cross-subsidies from high to low volume subscribers, and thereby created the impetus for recovering subscriber-fixed costs from low volume customers.

147. *Error #3*: Taylor (p. 16) incorrectly dismisses the recent introduction of aggressive discount plans on the grounds that they are reactions to the anticipated entry of the RBOCs into the long distance market. This is nothing more than rank speculation. The long distance carriers would have ample time to adjust pricing plans -- including the attendant

marketing -- in response to imminent RBOC entry once authorization for entry is granted (assuming they deemed this appropriate). As long as the RBOCs have not been authorized to enter long distance, the prospect of eventual RBOC entry cannot explain observed price reductions by existing long distance carriers.

148. *Error #4*: MacAvoy and Taylor both rely on measures of long distance prices that severely misrepresent actual market experience. Both ignore the obvious fact that Average Rate Per Minute (ARPM) measures average prices actually charged to consumers far more directly, more transparently, and with less noise than do their contrived price indexes. Both use price series that fail to reflect the full effects of discount programs. Both fail to supply supporting data, information on sample characteristics, and details of their calculations, thereby foreclosing opportunities for careful examination, validation, and evaluation. Over the years, we have repeatedly asked Dr. MacAvoy for the computer programs and input files that he uses to make his calculations, and he has repeatedly refused to supply them. Neither MacAvoy nor Taylor can explain why, if long distance prices are so high relative to costs, the RBOCs have not been far more aggressive in pursuing profit opportunities in long distance markets out-of-region. From what we can discern, MacAvoy does not appropriately weigh prices by calling volume, and therefore grossly overstates the importance of prices charged to low volume customers. MacAvoy and Taylor both appear to ignore the effects on prices of subscriber migration to discount plans and subscriber migration to lower cost carriers. Taylor infers large price increases in part by distributing fixed monthly charges over low calling volumes. Naturally, with a positive fixed monthly fee, it is

possible to obtain an average price per minute of any arbitrarily large magnitude by taking calling volume to be sufficiently low. The sharp increase in Taylor's price series over the last two years (Taylor Dec., p. 13) reflects the impact of fixed monthly fees on low volume subscribers, and convincingly demonstrates that Taylor has not appropriately volume-weighted his price series.

149. *Error #5* : Criticisms of ARPM (average rate per minute) as a summary measure of market prices are entirely without merit. MacAvoy offers two criticisms of ARPM. First, he asserts that ARPM is not a "representative transactions price," since "no consumer has ever picked up a telephone, placed a call, and paid ARPM." This is an astonishing statement coming from MacAvoy, since it is an indictment of his own methodology. ARPM is a weighted average of prices actually charged in the market. So is MacAvoy's measure of price -- in fact, it is a simple average of charges based on assumptions about the distribution of calling volumes and times. Customers don't pick up the phone and pay the MacAvoy price any more than they pick up the phone and pay ARPM.

150. To put this somewhat differently, there are two possible approaches to studying prices in the long distance market. First, one can look at prices disaggregated by different classes of customers. This is the approach that we have advocated in our discussion of *Error #2*, above. Second, one can examine a single measure of average price within a specific service category. This is a useful way to study broad price trends, but does not shed light on important details of competitive dynamics. Both ARPM and MacAvoy's price index

are examples of this second approach. ARPM is plainly superior to MacAvoy's index because it more accurately reflects the average price per minute actually paid in the market.

151. MacAvoy's second criticism of ARPM actually has nothing to do with the quality of ARPM as a measure of price. Rather, he asserts that one should evaluate the intensity of competition by examining the difference between ARPM and marginal cost, expressed as a fraction of ARPM (*see* MacAvoy Dec., p. 89), rather than the level of ARPM or the absolute difference between ARPM and marginal cost. We have already demonstrated that this claim is fallacious as a matter of economic theory (see our discussion of *Error #1*, above).

152. *Error #6*: MacAvoy and Taylor pretend that their estimates of costs are sufficiently inclusive. MacAvoy nevertheless agrees that "incremental costs, and their alleged increases, are extremely difficult to quantify" (p. 85). He arbitrarily excludes various kinds of fully or partially variable costs, and arbitrarily assumes that other variable costs have been constant through time. It is interesting to note that, according to Taylor (p. 12), access charges and other fees average 11.6 cents per minute. This is more that twice MacAvoy's cost estimate.

153. *Error #7*: MacAvoy incorrectly infers mutual forbearance among AT&T, Sprint, and MCI from what he falsely perceives as stable market outcomes. According to MacAvoy (p. 54), "The stability of MCI and Sprint market shares, *coupled with the fact that AT&T losses are not from their actions*, suggests a lack of competition among AT&T, MCI, and Sprint that has been pervasive" (emphasis added). The italicized portion of

the preceding sentence states a "fact" that passes beyond the boundaries of the simply non-factual and ventures into the territory of the ridiculous. In brief, MacAvoy confuses net shifts in shares with gross flows of customers.[58] MCI and Sprint have increased or maintained market share by minimizing losses to smaller companies while at the same time acquiring new customers from wherever possible, including from AT&T. The gross flows of customers between the top three firms have been extremely large, and evidence of aggressive competition for each others' customers (including statistics on customer churn and comparisons of calling plans) is pervasive.

154. *Error #8*: Both MacAvoy and Taylor incorrectly infer tacit collusion among AT&T, Sprint, and MCI from what they falsely perceive as price leadership. (*See* MacAvoy Dec., p. 19, or Taylor Dec., pp. 2-3). The "evidence" of price leadership is, for the most part, confined to basic rates. (MacAvoy also presents some estimates of "conjectural variations," which we discuss below.) This focus on basic rates misses three important points. First, there is no evidence of price leadership with respect to the introduction of discount plans, which is the appropriate venue for evaluating the intensity of competition. MacAvoy documents a recent example in his affidavit: AT&T's latest pricing move (7 cents per minute coupled with a fixed charge) followed the introduction of related offerings by MCI and Sprint. The implicit suggestion that the "Big 3" would coordinate on basic rates but not on discount plans is far-fetched in light of the fact that high volume customers account for a disproportionate fraction of industry revenues (recall that customers

[58] *See* Affidavit of Robert Aquilina for a further discussion of this issue.

with monthly calling volumes over $10 per month likely account for 93 percent of AT&T's revenues). Second, in some instances, synchronization of basic rates has resulted from sound competitive forces. In particular, when discounts are expressed as fractions of basic rates, similarities between basic rates facilitates discount price comparisons. A company that charges a lower basic rate would naturally wish to avoid the possibility that a customer might be misled by rival's higher proportional discount. Third, as Taylor himself admits (p. 4), the recent rate changes have varied considerably among the three carriers. Taylor grossly exaggerates by characterizing these movements as "lockstep." Such similarities of price movements across vendors occur naturally in highly competitive markets.

155. *Error #9*: MacAvoy and Taylor both ignore the obvious implications of long distance market structure. Indeed, neither has much to say about market structure. The reason should be obvious: any serious and appropriately dynamic perspective on market structure leads to the inevitable conclusion that the market is highly competitive. Nevertheless, both affidavits indirectly and incorrectly insinuate that it is possible to evaluate competition in long distance services by confining attention to three firms: AT&T, MCI, and Sprint. This leads to:

156. *Error #10*: Both MacAvoy and Taylor severely understate the competitive significance of long distance providers other than AT&T, Sprint, and MCI. MacAvoy refers to these firms as the "fringe," and focuses almost exclusively on AT&T, Sprint, and MCI. Taylor ignores the existence of smaller firms altogether, and writes as if the market consists solely of the three largest companies. Both perspectives are wildly at odds

with the second, fourth, and fifth points of agreement mentioned above. From 1990 to 1997, these so-called "fringe" firms captured an additional 16 percent of the overall long-distance market from the "Big 3" through aggressively competitive tactics, including low prices (offers in the neighborhood of 8 cents per minute are not uncommon) and high-profile promotion. And, as discussed above, the "Big 3" have responded competitively to the inroads made by smaller vendors.

2. The Potential Pro-Competitive Effects Of BA-NY's Entry Into Long Distance

157. Both MacAvoy and Taylor assert that BA-NY's entry into within-region long distance would intensify competition and benefit consumers. As in the previous section, it is useful to begin our discussion of their arguments by noting a point of agreement. According to MacAvoy (p. 29), "Market competitive conditions determine gains in welfare. Consumers stand to gain more from a new service provider's entry into a non-competitive market than they do from entry into an already robustly competitive market." Thus, if MacAvoy and Taylor are wrong about the state of competition in the long distance market, one must dismiss their assertions concerning the magnitude of potential gains.

158. In evaluating the likely competitive impact of BA-NY's entry into the long distance market, MacAvoy and Taylor commit a number of serious analytic errors. We will group our discussion of their errors into two categories: errors pertaining to the benefits of new service offerings, and errors pertaining to projected effects on prices.

a. Errors Pertaining To The Benefits Of New Service Offerings

159. Both MacAvoy and Taylor assert that BA-NY's entry will spur bundled pricing, new service offerings, and one-stop shopping (MacAvoy, p. 9, Taylor, p. 12). Long distance companies currently have ample competitive incentives to create bundled offerings and one-stop shopping alternatives. Their limited success in this regard is not due to a lack of incentives, but rather to a lack of ability, resulting from BA-NY's failure to open local markets fully. BA-NY's premature entry into the long distance market may indeed hasten the transition to bundled offerings, but the effects would be pernicious and anticompetitive. By maintaining barriers to local competition, BA-NY can artificially set itself up as the only economically viable provider of bundled services and one-stop shopping. This will magnify considerably the potential risks to competition in long distance services.

b. Errors Pertaining To Projected Effects On Prices

160. MacAvoy attempts to extrapolate the price impact of BA-NY's entry into long distance from a simplistic and inappropriate economic model. The following considerations invalidate his methods and conclusions.

161. First, MacAvoy's analysis is predicated on a fundamental contradiction. To understand this contradiction, we must begin with his basic premise (p. 16): under the conditions of excess capacity prevailing in long distance markets, "entry fosters an outbreak of competition to increase output . . . . The entrant and incumbent carriers are led to reduce prices." Is this premise correct? According to MacAvoy, hard econometric evidence conclusively demonstrates that, despite extensive entry and resulting reductions in

concentration, prices have risen steadily. In other words, MacAvoy's own evidence contradicts his central premise.

162. MacAvoy attempts to account for the historical relation between entry and prices by arguing that "declines in concentration are met with increases in firm conjectural variations so that price-cost margins do not fall, but rather are maintained or even increased" (p. 32). But when he projects the effects of BA-NY's entry, he maintains the assumption that the resulting decline in concentration would be associated with either fixed or decreasing conjectural variations. Once again, his interpretation of historical patterns contradicts his assumptions. If anything, as a large firm with a high projected market share (according to MacAvoy), BA-NY is more likely to recognize the strategic interdependence that exists between it and other large firms, than were the collection of smaller firms whose entry accounted for the historical decline in concentration. Consequently, by MacAvoy's logic, it is even more likely that the pertinent "conjectural variation" would increase, and that prices would rise.

163. One final point deserves emphasis. RBOCs have not engaged in out-of-region entry despite the brand name recognition, size and financial strength of those companies. In-region, the factor that principally distinguishes the RBOCs from other well known and strong communications companies is the RBOCs' monopolies over local services.

164. Second, MacAvoy projects post-entry market shares based on a survey of subscribers' qualitative carrier preferences. This procedure is extremely speculative,

particularly inasmuch as BA-NY does not currently have a long distance offering for consumers to evaluate. Conceivably, those expressing a preference for BA-NY could be the same individuals who mistakenly believe that BA-NY is their current long distance carrier. If, as seems likely, these individuals also have low calling volumes, then MacAvoy severely overstates BA-NY's post-entry market share by equating it with projected customer share.

165. More importantly, these market share projections do not acknowledge any role for price. Post-entry shares necessarily depend on price responses. Though MacAvoy attempts to estimate these price responses, he proceeds as if they have no effects on terminal market shares. This procedure is inconsistent and conceptually invalid.

166. Third, MacAvoy's calculations are predicated on a model where pricing depends on "conjectural variations." Several decades ago, theorists studying problems in Industrial Organization abandoned the conjectural variations model in favor of explicitly dynamic game theoretic alternatives, on the grounds that the conjectural variations model was inherently, fundamentally, and irretrievably flawed.[59] Because the model generates a convenient framework for estimation, Industrial Organization economists have continued to use it in some empirical applications. Nevertheless, its flaws as an empirical model have been thoroughly exposed. It is known, for example, that estimates of conjectural variations models may indicate that competition is extremely weak when it is very strong, or very strong when it is extremely weak. Inferences concerning the intensity of competition based on

[59] Briefly, it attempts to compress dynamic interaction into a static framework, and in doing so nonsensically assumes that every party makes its decision before every other party.

estimates of conjectural variations may be completely unrelated, or even inversely related to the actual level of competition prevailing in an industry.[60]

167. Fourth, MacAvoy's method of estimating conjectural variations is highly suspect. Though he provides few details, it is possible to infer some disturbing facts from his discussion. His estimates are based on annual time series observation for only nine years. MacAvoy thus recommends that national policy be based on estimates of subtle economic parameters using annual variation in price over a nine year period, without even acknowledging the obvious and severe limitations of this approach. It is hard to believe that MacAvoy could obtain useful information from variation within such a small sample, and we are suspicious that he coaxed coefficients out of the data by imposing noxious cross-equation restrictions (*e.g.*, similarities of conjectural variations across highly disparate services) to avoid gobbling up vanishing degrees of freedom. We do know from his discussion (p. 33, footnote 48) that he imposes the value of demand elasticities based on information from outside his sample. More specifically, these elasticities appear to be taken from an unpublished "preliminary cross-sectional analysis" conducted in 1976 -- before the break-up of the Bell system. The use of these elasticity estimates raise other serious problems. There are many pitfalls associated with the estimation of demand curves. We have no way of knowing, for example, if the author's preliminary analysis identified the demand function through the selection of appropriate instruments. It is also not clear what these elasticities

---

[60] *See* Kenneth S. Corts, "Conduct Parameters and the Measurement of Market Power," *Journal of Econometrics*, February 1999, 227-50.

properly measure: an industry elasticity, or an elasticity that incorporates migration of customers to MCI. It is not at all obvious that the demand elasticities should be the same for all firms given differences in brand images and offerings, and this confounds the estimation of company-specific conjectural variations. Finally, the standard errors that MacAvoy reports for his estimated conjectural variations are completely unreliable since they apparently treat these elasticities as fixed parameters rather than as estimates.

168. Fifth, based on MacAvoy's discussion, it is not at all clear that he properly accounted for the competitive responses of firms other than AT&T, Sprint, and MCI. If this is correct, it is a shocking omission, since MacAvoy himself documents the competitive significance of these firms during the 1990s (recall the second, fourth, and fifth points of agreement mentioned in the previous section).

169. A sixth concern, related to the fifth, is that MacAvoy ignores the possibility that BA-NY would simply displace competition from other firms, particularly from the aggressive "fringe" that has done so much to shape the competitive character of the industry. BA-NY also has extensive capacity from the "administrative" network it has built up over the years. MacAvoy himself notes (p. 23) that, in the presence of competition, "entry that created excess capacity would force exit of others, leading to long run prices at the same level as before entry." This is an important admission, given his agreement that the industry is currently in a state of excess capacity, and given his mischaracterization of competitive conditions. Alternatively, BA-NY could simply enter by taking over existing capacity, perhaps increasing concentration and thereby reducing competition through the

consolidation of smaller firms. Astonishingly, MacAvoy actually predicts that this will occur (p. 55).

170. Seventh, it is also difficult to determine whether MacAvoy dealt appropriately with the effects of discount programs. This is doubtful, since it would require explicit segmentation of the market into at least high, intermediate, and low volume segments. MacAvoy states merely that the "index discount price throughout Bell Atlantic's entire region is *assumed* to decrease from $0.128 per minute... to $0.086 following Bell Atlantic's entry" (emphasis added). We are appreciative that he is so forthright about assuming his conclusion.

171. Taylor's discussion of BA-NY's likely impact on long distance prices consists of little more than a collection of biased and unsubstantiated qualitative assertions about BA-NY's significance as a potential competitor. For the reasons give above, this role is vastly overstated.

VII. CONCLUSION

172. BA-NY's economists offer numerous reasons why BA-NY should be granted in-region interLATA relief. There are no sound public policy reasons why BA-NY should be granted such relief. Our conclusion derives from uncontroverted findings that: (a) there is no effective facilities-based competition in the provision of local exchange services; (b) even UNE-based competition is minimal and there is no evidence as yet that it will be effective in constraining BA-NY's market power; (c) regulatory safeguards against discriminatory abuses of market power directed at local exchange competitors have not yet

been developed, let alone tested; (d) finally, the evidence that the long distance market is not performing competitively is as unpersuasive as ever, implying that social benefits from BA-NY's entry into the long distance are likely to be small, or non-existent. When these gains are weighed against the real competitive risks, the verdict is clear: from the public interest standpoint, granting interLATA relief is completely premature.

FCC DOCKET CC NO. 99-295
AFFIDAVIT OF B. DOUGLAS BERNHEIM

I declare under penalty of perjury that the foregoing is true and correct.
Executed on October 15th, ~~1998~~ 1999

B. Douglas Bernheim

Sworn to and subscribed to before me

this 15th day of October, ~~1998~~ 1999

Notary Public

ALBERT SIU-TOUNG
COMM. #1179431
NOTARY PUBLIC - CALIFORNIA
SANTA CLARA COUNTY
My Comm. Expires Apr. 10, 2002

FCC DOCKET CC NO. 99-295
AFFIDAVIT OF JANUSZ A. ORDOVER

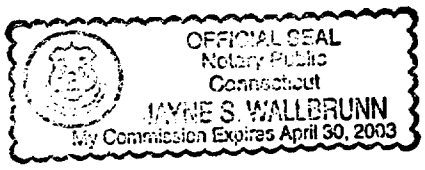
I declare under penalty of perjury that the foregoing is true and correct. Executed on October 15, 1999.

Janusz A. Ordover

Sworn to and subscribed to before me

this 15 day of October, 1999

Notary Public



FCC DOCKET CC NO. 99-295
AFFIDAVIT OF ROBERT D. WILLIG

I declare under penalty of perjury that the foregoing is true and correct.
Executed on October 14, ~~1998~~ 1999

Robert D. Willig

Sworn to and subscribed to before me

this 14th day of October, ~~1998~~ 1999

Notary Public

CHRISTINE G. GOLTIS
NOTARY PUBLIC, State of New Jersey
My Commission Expires July 19, 2003